Adjustable Divider Bas for a Display Rack

Background of the Invention

This invention relates, in general, to a display rack having adjustable dividers and, in particular, to a display rack having a base with adjustable bin sizes for storing, allocating and managing shelf space among rows of products.

In retail stores, such as in grocery stores, products are displayed on shelves for customer inspection and selection. It is therefore desirable that products be organized on the shelves to maximize the use of the shelf space since shelf space is very valuable in the grocery store. Accordingly, efficient use of the shelf space and the organized and appealing representation of the products displayed on the shelf are important for effective sale of products. Typically when displaying such products, an elongated shelf of a standard length (for example 3 or 4 feet) will be subdivided by vertical walls or dividers to provide appropriate bins of suitable widths to accommodate various products to be displayed. However, since the shapes and sizes of products vary greatly and since inventories, promotions, and sales are constantly changing, there is a need for efficiently and quickly adjusting of the width of the bins with increased variability.

Referring to U.S. Patent number 4,712,694, there is described a shelf organizer that comprises a two element assembly; a front stop rail and a vertical divider whereby a plurality of such vertical dividers are adapted to be slidably and releaseably retained by the stop rail. However, although this shelf organizer is capable of bin width adjustability, the dividers are attached to the front stop rail thereby requiring it to be attached to existing conventional shelving.

Hence, there exist a need for an improved adjustable shelf organizer having bin width adjustability.

Brief Description of th Drawings

In the accompanying drawings forming a part of the specification, and in which like numerals are employed to designate like parts throughout,

FIG. 1 is an isometric view illustrating an adjustable divider base display rack in accordance with a preferred embodiment of the present invention;

FIG. 2 is an isometric view of the display rack of Figure 1 illustrating its use for storing a plurality of product types having different widths;

FIG. 3 is an enlarged portion of a divider illustrating the locking clips;

FIG. 4 is a partial side view of the display rack illustrating the front of the rack in more detail;

FIG. 5 is a partial end view of the display rack illustrating in detail how the width between the dividers can be adjusted based on the orientation of the dividers with respect to the base;

FIG. 6 is an isometric view illustrating an adjustable divider base display rack in accordance with a second embodiment of the present invention; and

FIG. 7 is a partial end view of the display rack, similar to FIG. 5, illustrating in detail how the width between the dividers can be adjusted based on the orientation of the dividers with respect to the base and based on the selection of types of dividers.

Detailed Description of th Drawings

Referring to FIG. 1, there is shown an isometric view illustrating adjustable divider base display rack 100. Display rack 100 includes base 103 that includes a plurality of recessed trough regions that form a plurality of slots 110. Each of the plurality of slots 110 includes a plurality of holes 108 therein. The holes 108 typically start at the front of base 103 and are spaced apart throughout its respective slot from front to back by a predetermined distance. However, it should be understood that a variety of hole patterns in slots 110 may be utilized. Further, the plurality of slots 110 are positioned between first side 114 and second side 116 and are typically spaced apart by a predetermined distance. However, it should be understood that a variety of slot patterns within base 103 may be utilized.

Display rack 100 also includes a plurality of dividers 102 for insertion into the plurality of slots 110. Dividers 102 are typically pieces of plastic acting as a wall or divider for separating products on the shelf and keeping the products from hitting each other on their sides. The plurality of dividers 102 form a plurality of bins where each bin is typically defined by two adjacent dividers. It is understood that dividers 102 can be made at various heights to accommodate variable types of products. Dividers 102 have locking clips 112 for mating with corresponding holes 108 of base 103. In this manner, dividers 102 are received by respective ones of slots 110 whereby locking clips 112 are designed to align with a respective hole 108 of its corresponding slot 110. In a preferred embodiment, a pair of locking clips 112 are aligned to mate with one of the holes 108 so as to provide increased stability and rigidity of divider 102.

As will be shown in more detail hereinafter, dividers 102 may be inserted into slots 110 in at least two orientations. The first orientation may be represented by divider 102a, which takes the form of an L-shaped configuration, whereby the portion 118 of divider 102 is closer to first side 114 of base 103 than the outer edge of portion 120 of divider 102a. A second orientation for insertion

of a divider 102 into base 103 may be represented by divider 102b, which takes the form of a reverse L-shaped configuration, whereby the portion 122 of divider 102b is closer to second edge 116 of base 103 than the outer edge (not visible in FIG. 1) of the portion 124. As will be further explained hereinafter, the width of a bin that is formed between two adjacent dividers 102 may be adjusted based on the orientation of how adjacent dividers are inserted into the slots of base 103. Portion 120 of divider 102a typically has a width that is substantially the same as the width of one of the slots 110 to which it is to be inserted therein such that, when inserted, dividers 102 are snapped into slots 110 for locking dividers 102 in place thereby giving it rigidity and stability.

Display rack 100 also includes a front stop 104 for use in preventing products positioned behind it from falling off the front of the display rack when stocked. The front stop 104 is typically needed with dairy cases that are stocked from behind to prevent the product from falling off the shelf. It is understood, however, that front stop 104 is optional whereby the deli lip generally associated with a retailer's shelves may also serve as a stop for products. The front stop 104 is designed to be removable and may be attached to base 103 in a similar manner that dividers 102 are attached. That is, front stop 104 may include locking clips, similar to locking clips 112 of dividers 102, for insertion into a slot (similar to slots 110) having corresponding holes (similar to holes 108) on base 103. However, it should be understood that front stop 104 may be secured to base 103 in other ways such as by a molded pin-and-boss arrangement. Display rack 100 also includes curved member 106, which is attached to front stop 104 for securing base 103 over the deli lip and for ensuring that base 103 is in a more stable position. Front stop 104 and curved member 106 will explained in more detail hereinafter with respect to FIG. 4.

FIG. 1 also illustrates that base 103 includes break point regions 119 and that dividers 102 includes break point regions 117. These break point regions are regions on the molded plastic where the plastic is typically thinner to allow the plastic to be snapped off fairly easily at such regions. In this manner, the break

point regions allow the depth of display rack 100 to be quickly modified for different retailer store space configurations. The break point regions 119 are located on base 103 starting near the front of base 103 and extending to the back of base 103 and are spaced apart by a predetermined distance. The break point regions 117 on dividers 102 correspond to and align with break point regions 119 so that the base 103 and dividers 102 can be custom tailored for a variety of applications. It is understood that these break point regions may start at virtually any desired distance from the front of base 103 and be spaced apart by any desired distance. Further, they may be randomly or unequally spaced apart. Although break point regions 119 on base 103 are only illustrated as only running from side 114 to side 116, it is understood that a similar set of break point regions could exist on base 103 that run from front to back thereby allowing the width of display rack 100 to be quickly modified. Accordingly, these break point regions allow for easy modification of the width or depth of the display rack 100 for a variety of applications for the retailer.

FIG. 1 also illustrates that base 103 includes a plurality of drainage holes 126. These holes provide a path to drain any leakage of products that are stored on base 103 thereby helping to keep the products cleaner and dryer. This drainage feature will be described in more detail when discussing the molded rails with respect to FIG. 5

Display rack 100 is typically formed from an injection molded flat piece of plastic but other materials may also be used. The dimensions of base 103 may be, for example, 22 inches in depth and 24 inches wide and approximately 1/4 inch in height. However, it should be understood that these dimensions may be different to accommodate a variety of applications and uses. Further, through the use of break point regions, display rack 100 may be tailored for just about any application.

Referring now to FIG. 2, there is shown an isometric view of display rack 100 of FIG. 1 illustrating its use for storing a plurality of different product types

having variable widths. FIG. 2 illustrates that dividers 102d, 102e, 102f, 102g and 102h may be spaced appropriately within selected ones of slots 110 of base 103 so as to provide bins of different width for accommodating product types having different widths. For example, dividers 102d and 102e are appropriately spaced apart to accommodate the width of a first product type 202. Similarly, divider 102f is spaced appropriately apart from divider 102e to accommodate a second product type 204. Also, divider 102g is spaced appropriately apart from divider 102f to accommodate a third product type 206. Finally, divider 102h is spaced appropriately apart from divider 102g to accommodate a fourth product type 208. Accordingly, it is clear that the present invention readily allows dividers to be placed within base 103 in a plurality of different orientations and spacing differences so as to create a plurality of different bin sizes to accommodate a plurality of different product types having different widths.

Referring to FIG. 3, there is shown an enlarged portion of divider 102. As shown in FIG. 3, a typical divider 102 is configured in an L-shaped configuration having first and second portions 302 and 304 whereby, when inserted into base 103, portion 302 is typically perpendicular to base 103 and portion 304 is typically parallel with base 103. However, it should be understood that the present invention is not limited to portions 302 and 304 being formed in these directions. As aforementioned with respect to FIG. 1, divider 102 may be inserted into a selected one of slots 110 in at least two different orientations. The first orientation represents an L-shaped configuration and is characterized by portion 302 being closer to edge 114 (of base 103 of FIG. 1) than edge 305 of portion 304. The first orientation was generally shown in FIG. 1 by divider 102a. The second orientation represents a reverse L-shaped configuration and is characterized by portion 302 being closer to edge 116 (of base 103 of FIG. 1) than edge 305 of portion 304. The second orientation was generally shown in FIG. 1 by divider 102b. As should be observed, the second orientation is a 180-degree rotation of divider 102 with respect to the first orientation. As a variation to divider 102, it is understood that portion 302 may be rounded, as opposed to linear, so as to

efficiently store circular products such as frozen pizzas, and the like. In such case, portion 304 would remain the same as still be inserted into a selected one of slots 110 and portion 302 would be integrally molded with portion 304. .

FIG. 3 also illustrates tabs 112 in more detail. In particular, tabs 112 include angled edges 306 and 308 for aligning with the first and second edges, respectively, of a corresponding hole 108 of a slot 110. This allows for easier insertion of divider 102 into base 103 while still providing appropriate rigidity and stability of the divider when inserted and received by slot 110. It should be understood that tabs 112 could also be rounded at the edges, as opposed to having angled members 306 and 308, for easier insertion into slots 110. Further, it should be understood that tabs 112 may take a plurality of different configurations to enable easier insertion into holes 108 while still providing appropriate rigidity and stability for the divider 102 when inserted into a selected slot 110 of the base 103.

Referring now to FIG. 4, there is shown a partial side view of the display illustrating the front portion in more detail. FIG. 4 illustrates that top surface 412 of front stop 104 is coplanar with top surface 410 of base 103. This feature allows products that are stored on base 103 to fully rest up against the vertical portion of front stop 104 thereby efficiently utilizing as much shelf space as possible. Further, by not having a raised portion caused by the insertion of front stop into base 103, products easily slide to the edge of the front stop thereby minimizing damage to the products. FIG. 4 also illustrates that curved member 106 is attached to base 103 whereby such attachment may be accomplished by molding member 106 with base 103 or by otherwise securing member 106 to base 103 by the use of glue, screws or the like.

Referring now to FIG. 5, there is shown a partial end view of display rack 100 illustrating in detail how the width between adjacent dividers 102 can be varied based on the orientation direction that the dividers are inserted into base 103. Dividers 102k and 102l are recessed within base 103 in a first orientation

that represents an L-shaped configuration, as shown, On the other hand, dividers 102j and 102m are recessed within base 103 in a second orientation that represents a reverse L-shaped configuration, as shown. Because divider 102j is recessed in the first orientation and its adjacent divider 102k is recessed in the second orientation, the width of a first bin is represented by distance 502. Similarly, because adjacent dividers 102k and 102l are both recessed in slots of base 103 in the first orientation, a second bin width may be achieved as represented by distance 504. Finally, because divider 102l is recessed in base 103 in the first orientation and its adjacent divider 102m is recessed in base 103 in the second orientation, a third bin width may be achieved as represented by distance 506.

It should be clearly observed that distance 502 is a smaller distance than what the distance between adjacent dividers 102j and 102k would be if either one of the dividers were recessed in their opposite orientations. For example, if the orientation of divider 102k was reversed, then the bin width would be similar to distance 504. Likewise, if the orientation of dividers 102j and 102k were both reversed, then the bin width would be similar to distance 506. It is in this manner that the widths of the bins may be adjusted.

It is understood that although the adjacent dividers shown in FIG. 5 are placed in consecutive recessed troughs/slots for simplicity, it is understood that larger bin widths may be obtained by skipping one or more slots between adjacent dividers. Nonetheless, based on the orientation of each of the adjacent dividers, the bin width defined by such adjacent dividers may be finely tuned. Accordingly, FIG. 5 clearly shows that based on the orientation of insertion of dividers 102 into its corresponding slots of base 103, a plurality of bin width offsets may be achieved. Further, since space on retail shelves is extremely valuable, savings of ¼ inch, 1/8 inch or even less in some bin widths is a tremendous selling point for use of the present invention.

As is also shown in FIG. 5, base 103 includes recessed troughs that form slots for receiving and mating with the plurality of dividers 102. When divider 102 is fully inserted into a recessed trough of base 103, the top surface 510 of base 103 is substantially planar with the top surface 512 of divider 102. This provides for a substantially planar bottom surface for each of the bins thereby providing a better storage space for products.

FIG. 5 also shows molded rails 508 that exist on the bottom portion of base 103. Rails 508 function to raise the overall display rack 100 off the retailer's shelf that it typically rests upon thereby allowing potentially leaky products, such as milk and the like, to adequately drain below that divider rack 100 through holes 126. Thus, rails 508 along with drainage holes 126 help ensure that the products on base 103 are kept in a cleaner and dryer condition when customers remove them from the self.

Referring now to FIG. 6, there is shown an isometric view illustrating adjustable divider base display rack 600 in accordance with a second embodiment of the present invention. FIG. 6 illustrates that dividers 102n and 102p may take the form of a T-shaped configuration. Generally, T-shaped dividers can only be inserted into slots 110 in one orientation, as opposed to the L-shaped dividers which could be inserted in two different orientations. However, as will be more clearly shown in FIG. 7, when using both T-shaped dividers and L-shaped dividers in selected slots of the same base 103, an even finer adjustment of bin widths may be achieved.

Referring now to FIG. 7, there is shown a partial end view of the display rack 100, similar to FIG. 5, illustrating in detail how the width between the dividers can be adjusted based on the orientation of the dividers with respect to the base and based on the selection of types of dividers. As shown in FIG. 7, because dividers 102s and 102u are T-shaped, a different bin width adjustment may be achieved with respect to its adjacent dividers. For example, the bin width between adjacent dividers 102r and 102s may be represented by distance 702

whereby distance 702 is slightly wider than distance 502 (of FIG. 5) since divider 102s is T-shaped. Similarly, the bin width between adjacent dividers 102t and 102u may be represented by distance 706 whereby distance 706 is slightly narrower than distance 506 (of FIG. 5) since divider 102u is T-shaped. Therefore, by the use of T-shaped dividers in conjunction with L-shaped dividers, it is possible to provide even finer adjustment of the bin widths.

FIG. 7 also illustrates that top surface 712 of T-shaped divider 102u is coplanar with top surface 510 of base 103 in a similar manner that top surface 512 of L-shaped divider 102m was coplanar with the top surface of base 103, as illustrated in FIG. 5. This coplanar feature provides for a substantially planar bottom surface for each of the bins thereby providing a better storage space for products.

By now it should be apparent from the foregoing description that a novel display rack has been provided. The display rack includes a base having a plurality of recessed troughs that form a plurality of slots whereby each of the plurality of slots include a plurality of holes therein. The display rack further includes a plurality of divider pieces whereby each one of the divider pieces is adapted for insertion into a selected one of the slots of the base. The dividers also include a plurality of tabs that are aligned with the plurality of holes within its respective slot so as to facilitate stability and rigidity of the dividers when mated and recessed within its respective slot of the base. The dividers take the form of a L-shaped configuration which allows the dividers to be recessed within a slot of the base in a first or a second orientation thereby allowing variable bin width adjustment with respect to adjacent dividers. The dividers may also take form of a T-shaped configuration which, when used in conjunction with L-shaped dividers, allow for even finer adjustment of adjacent bin widths.

It will be understood that the embodiments of the present invention that have been described are illustrative of some of the applications of the principles of the present invention. However, numerous modifications may be made by those skilled in the art without departing from the spirit and scope of the invention.